

Sub B17

## CLAIMS

1. A method for transmitting digital information in the form of consecutive symbols over a transmission channel susceptible for intersymbol interference, comprising, in the following order, the successive steps of
  - 5 a) encoding the digital information to be transmitted with an outer code,
  - b) interleaving the encoded digital information to be transmitted,
  - c) encoding the interleaved encoded digital information with a recursive inner code and in conjunction therewith modulating the encoded interleaved encoded digital information onto a carrier, and
  - 10 d) transmitting the carrier containing the modulated encoded interleaved encoded digital information.
2. A method according to claim 1, wherein step b) consists of pseudorandom interleaving.
- 15 Sub C17 3. A method according to claim 1, wherein the recursive inner code in step c) is a differential code.
4. A method according to claim 3, wherein step c) consists of modulating the interleaved encoded digital information onto a carrier using a differential modulation method.
- 20 5. A method according to claim 1, wherein the outer code in step a) is a convolutional code.
- 25 6. A method according to claim 5, wherein the outer code in step a) is a serial concatenated convolutional code.
- 30 Sub B27 7. A method for transferring digital information in the form of consecutive symbols from a transmitter over a transmission channel susceptible for intersymbol interference to a receiver, comprising, in the following order, the successive steps of
  - a) encoding the digital information to be transmitted with an outer code,
  - b) interleaving the encoded digital information to be transmitted,
  - c) encoding the interleaved encoded digital information with a recursive inner code and in conjunction therewith modulating the encoded interleaved encoded digital information onto a carrier,
  - 35 d) transmitting the carrier containing the modulated encoded interleaved encoded digital information,

- e) receiving the transmitted carrier containing the modulated encoded interleaved encoded digital information,
- f) producing an estimate of the characteristics of the transmission channel,
- g) converting the received carrier into consecutive symbols in a SISO equalisation
- 5 process using the produced estimate of the characteristics of the transmission channel,
- h) deinterleaving the consecutive symbols, and
- i) decoding the deinterleaved consecutive symbols in a SISO decoding process.

Sub C17 10 8. A method according to claim 7, additionally comprising a number of iterations through steps g), h) and i) as well as a step of reinterleaving between steps i) and g), wherein said number is at least 2.

Sub A37 15 9. A method according to claim 7, wherein the SISO equalisation process of step g) works over the combined Trellis of the recursive inner code and modulation of step c) and the nonrecursive intersymbol interference characteristics of the transmission channel.

Sub B27 20 10. A transmitter for transmitting digital information in the form of consecutive symbols over a transmission channel, comprising

- a) an outer encoder for encoding the digital information to be transmitted with an outer code, said outer encoder having an input and an output,
- b) an interleaver for interleaving the encoded digital information to be transmitted, said interleaver having an input and an output of which the input is coupled to the
- 25 output of the outer encoder and
- c) a recursive inner encoder and a modulator unit for encoding the interleaved encoded digital information with a recursive inner code and in conjunction therewith modulating the encoded interleaved encoded digital information onto a carrier, said recursive inner encoder and a modulator unit having an input and an
- 30 output of which the input is coupled to the output of the interleaver.

11. A transmitter according to claim 10, wherein said interleaver is a pseudorandom interleaver.

Sub C17 35 12. A transmitter according to claim 10, wherein said recursive inner encoder and modulator unit forms an integrated structure.

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